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CIA-RDP85T00875R00170003

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CIA/DER/IM 72-39

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**DIRECTORATE OF
INTELLIGENCE**

Intelligence Memorandum

North Vietnam's Agriculture: Aftermath of the 1971 Floods

Secret

ER IM 72-39
March 1972

Copy No. 87

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
March 1972

INTELLIGENCE MEMORANDUM

**NORTH VIETNAM'S AGRICULTURE:
AFTERMATH OF THE 1971 FLOODS**

Summary

1. North Vietnamese agriculture was well on the way to recovering from the effects of war and poor weather when it was dealt a severe setback by destructive floods in late-summer 1971. About 35% to 45% of the autumn rice crop was lost, and total rice output for the year fell to the lowest level since 1955. Repairing the extensive physical damage to irrigation facilities and crop lands probably will not be completed in time to prevent adverse effects on the 1972 spring harvest. Should the late-summer monsoon be a particularly wet one, there is a possibility that the country's weakened dike system will not be able to contain the resulting flood.

2. Flood losses have caused a food deficit for the July 1971-June 1972 period of about one million tons, double the deficit of the preceding 12 months. Food imports from Communist countries can be expected to offset most of the shortage.

Discussion

Background

3. Agriculture, the mainstay of North Vietnam's economy, employs 70% of the labor force and accounts for 50% of gross national product (GNP). The regime looks to agriculture not only for food but also to provide the labor and capital (in the form of agricultural exports) to further North Vietnam's program of industrialization. Since only 12% of the land area currently is suitable for cultivation, this has required heavy investment in water control facilities and extensive double cropping to meet the country's food needs. Nearly three-fourths of total cultivated land lies in the Red

Note: This memorandum was prepared by the Office of Economic Research and coordinated within the Directorate of Intelligence.

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River Delta. About 70% of cultivated acreage is in rice, 20% in secondary food crops, 5% in industrial crops, and the remainder in other crops. The spring harvest, which is heavily dependent on irrigation, accounts for about one-third of the yearly rice crop and practically all other crops. The larger rice crop is harvested in autumn.

4. Output of food crops increased during the first few years of Communist rule and peaked at close to 4 million metric tons in 1959. During 1960 to 1965, average production declined to a level roughly 10% below the 1959 record (see Table 1). Since 1965, manpower shortages, caused by the withdrawal of men for military service and for bomb damage repair, have compounded North Vietnamese agricultural problems. But by 1969, rice production had begun to recover as a result of increases in both acreage and yield. This recovery can be attributed in part to the cessation of bombing in 1968, and in part to the introduction of miracle rice strains.⁽¹⁾ These strains accounted for a rapidly growing share of the spring harvest - 100,000 hectares in 1969; 200,000 in 1970; and more than 500,000 in 1971 (close to 60% of the total). Miracle rice strains were also planted on more than 200,000 hectares (about 15%) of the autumn crop area in 1970.

5. Food production problems during the past decade have necessitated substantial imports to maintain the basic monthly ration established in 1956⁽²⁾ of 13.5 kilograms of rice and secondary crops. As shown in Table 2, imports peaked during 1968/69 following the exceptionally poor rice harvest in 1968 and subsequently declined as domestic food production began to recover.

Progress Thwarted in 1971

6. Agricultural prospects for 1971 were promising after the excellent June harvest. Rice output was apparently the highest ever achieved, reaching 1.3 million tons of milled rice and increasing 20% over the previous year. Secondary crop production apparently increased very little, but the area under industrial crops reportedly was the largest in five years. As planting for the autumn harvest was nearing completion, the rains came.

7. North Vietnam experiences an annual threat of floods from June through September because of the extremely flat topography of the Red

1. North Vietnam stresses cultivation of high-yielding strains "Agricultural-5" and "Agricultural-8," which are probably identical to IR-5 and IR-8 developed by the International Rice Research Institute in the Philippines.

2. This ration provides about 1,600 calories per day, about four-fifths of the minimum requirement for adequate health. Additional calories are obtained from other rationed and unrationed foodstuffs.

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River Delta and the fact that most of the water runoff from the highlands passes through the Delta.⁽³⁾ A system of primary and secondary dikes provides the only protection for this densely populated and fertile rice growing region. Past floods frequently have brought water levels near the top of dikes, but rarely for such an extended period of time as in 1971. Rainfall during the period from 1 July to 20 August was more than double the average for the period, and the cumulation of flood-stage waters lasted for 55 days. At the height of the flooding, four major breaches occurred in the primary dikes along the Red River, and two of them - near Yen Vien and north of Hai Duong - inundated vast areas of riceland. By late September the area of heavy flooding had expanded about 25%, probably because prolonged soaking and high water-pressure had undermined the secondary dike systems. (Figure 1 depicts the flooding as a composite of observations derived from photography.) The floods receded gradually in October, but during the last week of the month rains from deteriorating tropical storm Hester caused renewed flooding over large areas.

8. Photography indicated that some 450,000 hectares of land usually devoted to autumn rice were flooded sufficiently to destroy the entire rice crop. On an additional area of more than 200,000 hectares, output probably was reduced by perhaps one-half. Total paddy losses are estimated to range from 1.1 million to 1.3 million tons, or 35%-45% of the autumn crop. In terms of milled rice, the loss amounts to 700,000 to 900,000 tons. Total rice production in 1971 dropped to 2.4 million to 2.5 million tons of milled rice, about 20% below the previous year and the lowest since 1955.

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9. Other agricultural losses are difficult to quantify. Press reports indicate the loss of some state grain reserves. The attention given publicly to the shortage of draft animals and the emphasis on hog breeding suggests significant losses. One North Vietnamese official reported that 20% of all the pigs, cows, oxen, and chickens were killed by the floods.

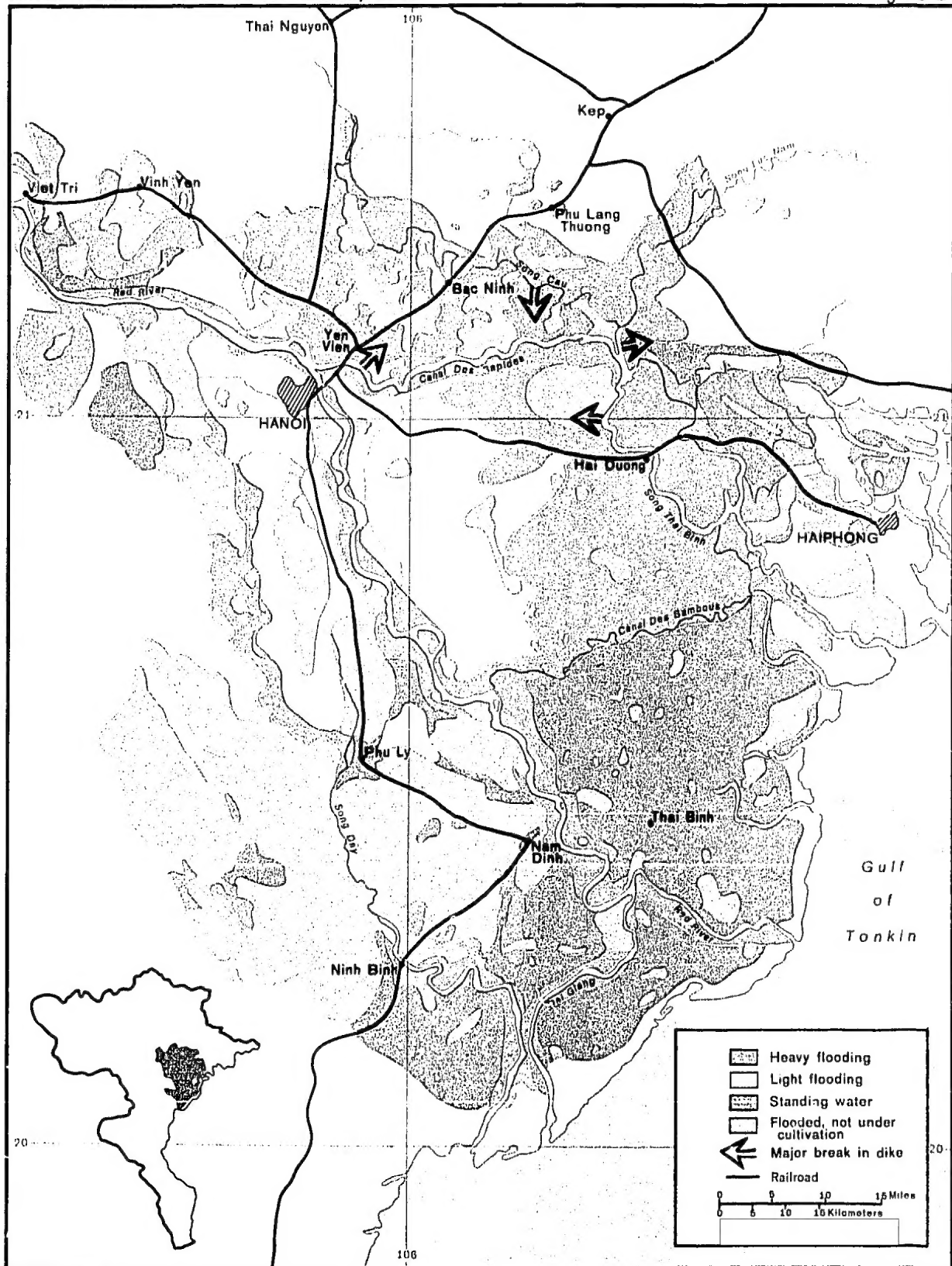
10. As the year drew to a close, North Vietnam was faced with the prospect of a vastly greater food deficit than in recent years, and little choice of altering the situation without increased foreign assistance until

3. The southern panhandle of North Vietnam and the northern part of South Vietnam experience roughly the same weather patterns. Flooding in this region is quite unlike the cumulating floods characteristic of the Red River Delta. From Thanh Hoa in the north to Quang Ngai in the south, flash floods are generated by incoming typhoons during September-October, and the affected locale varies, depending on where the typhoons hit. Typhoon Hester, which struck the Da Nang area in late-October 1971, caused considerable damage to housing and military installations in Military Region I, although the impact was greatly diminished as it moved through the North Vietnamese panhandle.

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North Vietnam: Flooded Ricelands, 1971

Figure 1



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the next major harvest in June 1972. State reserves may contain several months' supply, but the regime presumably would be reluctant to draw on these for strategic reasons. As an interim measure the regime called for increased cultivation of secondary crops and vegetables during the period between the autumn harvest and transplanting of miracle rice in February and March. This so-called winter crop has made a negligible contribution to food supply in previous years, and there is evidence that the current potential is limited because of seed and fertilizer shortages, as well as unfamiliarity on the part of the peasants with winter crop cultivation techniques.

11. Should production from the winter crop be negligible and the government choose not to draw down state reserves, maintenance of the food supply at the level of past years will require delivery of some one million tons of food grains during the period July 1971-June 1972 (see Table 2). Actual requirements will be less than this amount to the extent that rations are reduced. A countrywide cut of 1 kilogram in the monthly ration equates to a reduction of 20,000 tons per month. As of early January 1972 [] the basic ration there was unchanged at 13.5 kilograms, but a newspaper article published at about the same time claimed that peasants in the areas not devastated by the floods had "voluntarily" reduced consumption and sold grain to the state at the free market price (at least double the official sale price) in order to help those in flooded areas. It should be noted that the ration in Hanoi reportedly dropped to as low as 9 kilograms per month during the spring of 1961 when two poor harvests in a row, together with export commitments, caused an acute food shortage in North Vietnam.

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12. Identified food grain imports during the first 8 months of the food year (July 1971-February 1972) totaled about 350,000 tons, an average monthly rate of roughly 45,000 tons. If imports continue at this rate in March-June 1972, imports will total somewhat more than 500,000 tons - substantially less than the estimated requirement of one million tons. However, unidentified imports probably include significant quantities of food grains. Furthermore, the rate of identified deliveries of food grains has risen in recent months, and a further rise is possible as China has made an open-ended offer to supply wheat from the Sino-Canadian contract for 1972.

Outlook for Agriculture

13. Apart from immediate rice losses, the floods produced extensive longer term physical damage. The enormous force of water unleashed through breaches in the primary dikes caused widespread erosion far beyond obvious scouring effects in the proximity of the breach (see Figure 2). Long stretches of irrigation canals were cut, and the press reported many washed

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out pumping stations, which accounts for the sustained period of inundation. Flood water everywhere deposited silt in drainage ditches, further upsetting water control as attested to by large areas with standing water in the fields in November (see Figure 3).

14. Repair of the pervasive damage to water control facilities is the most immediate problem now confronting North Vietnam, as dry season crops (November-June) are heavily dependent on irrigation and wet season crops (June-November) on adequate pumping and drainage. Premier Pham Van Dong admitted disappointing progress in rehabilitation at the end of the year, which no doubt is due to the unusually heavy burden placed on the peasantry. The peasants have been charged not only with normal cultivation tasks and an expanded winter crop, but press reports clearly indicate that most of the manpower used in repair of water control facilities also will come from peasants living in the vicinity. A relatively long period of reconstruction is inherent because prolonged inundation during the floods probably caused subtle undermining that will not show until the facilities are used. In the case of primary dike systems, weakened areas may not be apparent until the next wet season. Recovery from these effects at best will extend well into 1972.

15. Under the circumstances, there is a high probability that agricultural output in 1972 will be adversely affected. Unrepaired water control facilities will limit prospects for more intensive cultivation, and plans call for only a moderate increase in miracle rice, from about 60% of total rice acreage in 1971 to 65% this spring. The 1972 spring harvest, therefore, seems destined to fall below last year's bumper crop. Success of the autumn harvest will be governed mainly by weather contingencies. Statistically, another disaster may not be in the offing, but the threat of floods throughout the Delta nevertheless will be accentuated because of the probably weakened dike system.

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APPENDIX

Statistical Tables

The estimates of food crop production in North Vietnam during 1959-71 (Table 1) were wholly derived from material published in the North Vietnamese press. The Directorate-General of Statistics has published statistical handbooks covering the period through 1963, and data for 1964-65 are available in semiofficial publications, notably a journal article of February 1966. Since then, only fragmentary bits of information relating to food production have been released, and the estimates that have been developed for 1966-71 are, of course, subject to error. They are, however, consistent with data [redacted] on North Vietnamese imports of food grains. Furthermore, the derived estimates of per capita food supply (Table 2), which remain fairly constant at about 14 kilograms per month, agree with reports from observers in Hanoi indicating the basic ration of 13.5 kilograms established in 1956 was not altered during 1966-71.

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Table 1

Production of Food Crops in North Vietnam

Million Metric Tons

<u>Year</u>	<u>Total</u>	<u>Rice a/</u>	<u>Secondary Crops b/</u>
1959	3.9	3.5	0.4
1960	3.2	2.8	0.4
1961	3.7	3.1	0.6
1962	3.6	3.0	0.6
1963	3.5	2.9	0.6
1964	3.7	3.0	0.7
1965	3.8	3.1	0.7
1966	3.5	2.8	0.7
1967	3.6	2.8	0.8
1968	3.3	2.6	0.7
1969	3.4	2.7	0.7
1970	3.6	3.0	0.6
1971	3.0-3.1	2.4-2.5	0.6

a. Milled or polished rice.

*b. Corn, sweet potatoes, and manioc
expressed in rice equivalents.*

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Table 2
Staple Food Supply in North Vietnam

Food Year <u>a/</u>	Million Metric Tons			Population (Million)	Apparent Consumption Per Capita per Month (Kilograms) <u>c/</u>
	Domestic Production	Net Imports <u>b/</u>	Total Supply		
1959/60	3.9	-0.5	3.4	15.9	14
1960/61	3.2	<u>d/</u>	3.2	16.2	13
1961/62	3.7	<u>d/</u>	3.7	16.6	15
1962/63	3.6	<u>d/</u>	3.6	17.0	14
1963/64	3.5	<u>d/</u>	3.5	17.4	13
1964/65	3.7	0.2	3.9	17.9	15
1965/66	3.8	0.1	3.9	18.3	14
1966/67	3.5	0.3	3.8	18.7	14
1967/68	3.6	0.5	4.1	19.1	14
1968/69	3.3	0.8	4.1	19.3	14
1969/70	3.4	0.6	4.0	19.6	14
1970/71	3.6	0.5	4.1	19.8	14
1971/72	3.0-3.1	1.0-1.1	4.1	20.1	14

a. July to June.

b. Rice, wheat flour, and corn.

c. Gross supply less a 20% allowance for seed and livestock feed requirements, industrial uses, and losses.

d. Not available.